

ID: 18812

## DOCUMENTATION FOR USING MY DFA CHECK TOOL

```
(?) Enter numbers of rows of Transition Table:
Rows = 4
ArTrans[row 1][col 1] = 2
ArTrans[row 1][col 2] = 1
ArTrans[row 2][col 1] = 1
ArTrans[row 2][col 2] = 1
ArTrans[row 3][col 1] = 3
ArTrans[row 3][col 2] = 2
ArTrans[row 4][col 1] = 3
ArTrans[row 4][col 2] = 2
(?) Enter the number of final states: 1
Enter final state q_3

(?) Enter the string: bbabababababbabababbbbbbabbabbbbaaabbbababa

===== Result =====

--> Transition Table:
+-----+-----+
| States | a     | b     |
+-----+-----+
| q0     | q2    | q1    |
| q1     | q1    | q1    |
| q2     | q3    | q2    |
| q3     | q3    | q2    |
+-----+-----+

--> Final States are: q3

--> The DFA stopped at state q1
--> The string is not accepted by the given DFA!
```

Input requirement:

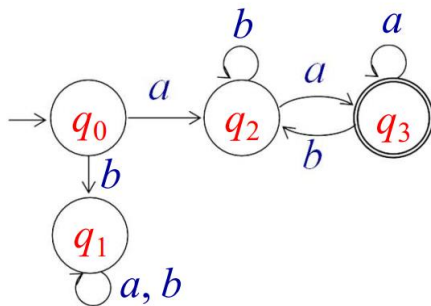
- The number of rows of the exact DFA transition table
- Every index of all states of the transition table
- The number of final states, and the index of them
- The string which you want to check with the given DFA

Output:

- The visualization of the DFA transition table
- All the final states
- Which states that the DFA stopped at when completing checking the string
- The validity of the string

**Demo:**

Given  $L(M) = \{awa : w \{a,b\}^*\}$ , check the validity of the string bbabababababbaababbababbbbaa



Transition Table:

	a	b
q0	q2	q1
q1	q1	q1
q2	q3	q2
q3	q3	q2

Final state is q3

**Implement this problem on the program:**

1. First we input the number of rows of the transition is 4, then enter each element of the table to the program like this:

```
(?) Enter numbers of rows of Transition Table:
Rows = 4
ArTrans[row 1][col 1] = 2
ArTrans[row 1][col 2] = 1
ArTrans[row 2][col 1] = 1
ArTrans[row 2][col 2] = 1
ArTrans[row 3][col 1] = 3
ArTrans[row 3][col 2] = 2
ArTrans[row 4][col 1] = 3
ArTrans[row 4][col 2] = 2
```

Transition Table:

	a	b
q0	q2	q1
q1	q1	q1
q2	q3	q2
q3	q3	q2

ArTrans[1][1] = 2

ArTrans[2][2] = 1

2. Then we enter the number of final states and what are they:

```
(?) Enter the number of final states: 1
Enter final state q_3
```

Full name: Vu Hoang Tuan Anh

ID: 18812

3. After all, enter the string:

```
(?) Enter the string: bbabababababbaababbababbbbaa
```

4. Enjoy the final result:

```
===== Result =====
--> Transition Table:
+-----+
| States | a | b |
+-----+
| q0     | q2 | q1 |
| q1     | q1 | q1 |
| q2     | q3 | q2 |
| q3     | q3 | q2 |
+-----+
--> Final States are: q3

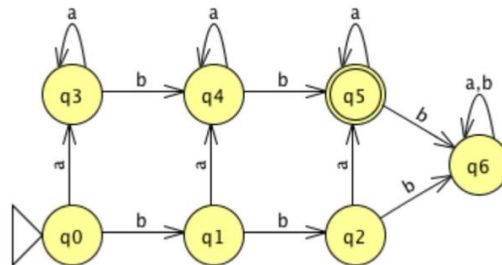
--> The DFA stopped at state q1
--> The string is not accpeted by the given DFA!
```

Input sample I used above (Just copy it and paste on the program, then press Enter to see the result):

```
4
2
1
1
1
3
2
3
2
1
3
bbabababababbaababbababbbbaa
```

**Bonus Sample 2:**

Given  $L(M) = \{a^n b^2 : n \geq 1\}$  (all strings with at least one a and exactly two b's). Check the validity of the string aaaaaaaaaabaaabaaaaaaaaaaaaa



Input sample:

7
3
1
4
2
5
6
3
4
4
5
5
6
6
6
1
5
aaaaaaaaaaaaabaaabaaaaaaaaaaaaa